



Air Quality Permitting Technical Memorandum

November 18, 2002

**TIER II Operating Permit and Permit to Construct
No. 001-00112**

**Sinclair Oil Corporation Boise Products Terminal
Boise, Idaho**

Project No. T2-010017

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FINAL PERMIT

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LIST OF ACRONYMS

AACC	Acceptable Ambient Concentrations for Carcinogens
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
AP-42	Compilation of Air Pollutant Emissions Factors, Volume I: Stationary Point and Area Sources, 5 th Edition
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
EPA	Environmental Protection Agency
HAPs	hazardous air pollutants
IDAPA	A numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pound(s) per hour
LEL	lower explosion limit
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
PM ₁₀	particulate matter with an aerodynamic diameter less than or equal to 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PVC	poly vinyl chloride
SIP	State Implementation Plan
SO ₂	sulfur dioxide
SM	synthetic minor
SVE	Soil Vapor Extraction
T/yr	tons per year
VOCs	volatile organic compounds

PURPOSE

The purpose of this memorandum is to explain the legal and factual basis for this draft Tier II operating permit and permit to construct in accordance with IDAPA 58.01.01.200 and 400, *Rules for the Control of Air Pollution in Idaho*.

DEQ staff has reviewed the information provided by the Sinclair Oil Corporation (Sinclair) regarding the operation of their facility located in Boise, Idaho. The permit is a renewal of Sinclair's expired Tier II operating permit issued August 23, 1996. The basis for emissions compliance is the limitation of gasoline and diesel throughput to the storage tanks and loading racks. To comply with the SM requirements, Sinclair has chosen to only dispense diesel fuel oil through the loading racks. Gasoline products will not be distributed through the loading racks.

PROJECT DESCRIPTION

This project is for the renewal of a Tier II operating permit for the Sinclair Oil Corporation Boise Products Terminal located at Boise, Idaho. It creates state and federally enforceable limitations on the facility's potential to emit HAPs and VOCs.

This permit allows the Boise Products Terminal to remain a SM source for both HAPs and VOC emissions. The permit limits VOC and HAPs emissions throughput to below the major facility threshold:

- VOC emissions - 100 T/yr, and
- HAPs emissions - 10 T/yr for a single HAP and 25 T/yr for aggregated HAPs.

Therefore, this facility is not subject to Tier I permitting, pollutant registration, and registration fee payments for major facilities.

Emissions Sources at the Boise Facility

External Floating Roof Storage Tanks (Tanks 401, 404, 411, 421, and 431): Gasoline or distillate fuel grade petroleum products can be stored in these tanks. Emissions from these units are a result of standing and withdrawal losses as defined per AP-42, Section 7, and were calculated using Tanks Version 4.0 software. The maximum potential emissions from any one of these tanks occurs when gasoline grade petroleum product is loaded, stored, and unloaded at the defined maximum throughput. The maximum throughput for any one of these tanks is defined as the capacity of the pipeline supplying the terminal that distributes product to four of the five storage tanks. (This assumes that one of the storage tanks is off line for maintenance.)

Fixed Roof Storage Tanks (Tanks 402, 405, and 406): Distillate fuel grade petroleum products can be stored in these tanks. Emissions from these units are a result of breathing and working losses as defined per AP-42, Section 7, and were calculated using Tanks Version 4.0 software. The maximum potential emissions from any one of these tanks occurs when distillate fuel grade petroleum product is loaded, stored, and unloaded at the defined maximum throughput. The maximum throughput for any one of these tanks is defined as the capacity of the pipeline supplying the terminal that distributes to two of the three storage tanks. (This assumes that one of the three storage tanks is off line for maintenance.)

Transmix Storage Tank (Tank 400): The transmix storage tank is a fixed-roof type that is used to store "slop oil" (i.e., off specification petroleum products, residual products from the other storage tanks, water contaminated with petroleum, etc.). Emissions from this unit are a result of breathing and working losses as defined per AP-42, Section 7, and were calculated using Tanks Version 4.0 software. The maximum potential emissions occur when gasoline grade petroleum product is loaded, stored, and unloaded at the defined maximum throughput.

Prover Storage Tank: The prover storage tank is a fixed-roof type and is used to calibrate the flow meters in the loading rack system. Emissions from the prover storage tank occur when the tank is filled and displaced vapors vent to the atmosphere. The maximum potential emissions occur when gasoline grade petroleum product is loaded during meter calibration testing and is dependent on the number of calibration tests performed. Emissions from this unit were calculated using Tanks Version 4.0 software utilizing AP-42 methodology.

Gasoline and Distillate Fuel Grade Petroleum Product Loading Racks: Dispensing product at the two-bay loading rack system causes displaced vapors from the carriers to discharge to the atmosphere through the loading hatches in the top of the tank. The maximum potential emissions from this source occur when gasoline and distillate fuel-grade petroleum product is dispensed at the defined maximum throughput. The maximum potential VOC emissions from the loading rack system were based upon AP-42, Section 5.2, equation (1). The calculation of maximum potential HAPs emissions from the loading racks system were based on the maximum potential VOC emissions rate speciated for HAPs. Speciation of HAPs was obtained from the vapor mass fractions listed in the Tanks Version 4.0 output (Appendix A).

Petroleum products may also be pumped via pipeline from Sinclair's Boise Products Terminal to the Northwest Terminalling Company – Boise Terminal for storage or distribution at their facility. The Northwest Terminalling Company – Boise Terminal is located at 201 North Phillippi Street, Boise, Idaho.

This permit prohibits the dispensing of gasoline through the loading racks.

Soil Vapor Extraction System: The SVE is used to remediate subsurface points contaminated with petroleum hydrocarbons. These remediation points are screened at different intervals to remediate distinct portions of the subsurface. Subsurface PVC piping connects the extraction points to the equipment enclosure where they manifold into a single line. A regenerative blower is utilized to withdraw the vapors from the soil. A thermal oxidizer is used to treat the soil vapors prior to discharge to the atmosphere.

Fugitive Emissions: Fugitive emissions stem from several sources, such as: pump seals, valves, flanges, and drains.

FACILITY DESCRIPTION

Sinclair's Boise Products Terminal facility distributes petroleum products received through the Chevron supply pipeline, which originates in Salt Lake City, Utah. Petroleum products consisting of various grades of gasoline and distillate fuel oil are temporarily stored in tanks prior to transfer to mobile carrier tanks. The petroleum products can also be sent back into the pipeline for transportation to additional tank farms.

Petroleum products consisting of various grades of distillate fuel oil and gasoline are received by the facility through the Chevron pipeline. The petroleum products are stored in any of eight existing storage tanks. Gasoline is allowed to be stored in five of these tanks, and distillate fuel oil can be stored in any of the eight existing tanks. A prover tank is used for flow calibration, and a transmix tank is used to store "slop oil." Distillate fuel oil products are transferred from the tanks to the carrier by the loading rack system, prior to offsite transport and delivery. Gasoline products are sent back to the pipeline for offsite transportation.

The carrier is situated in one of the two loading rack bays where one or more loading rack arms are inserted through the fill hatch(es) in the top of the carrier tank. Only distillate fuel oil product is transferred from the storage tank to the loading rack system, which delivers the product to the carrier tank. Additives may be blended with the distillate fuel oil product during carrier tank loading.

PERMIT HISTORY

August 23, 1996	A Tier II operating permit was issued to Sinclair.
September 21, 1998	A SVE PTC was issued.
July 7, 1999	A PTC amendment was issued to use the thermal oxidizer unit on a standby basis.

SUMMARY OF EVENTS

July 3, 2001	DEQ received a renewal application for the Tier II operating permit.
September 27, 2001	The application was declared incomplete.
April 8, 2002	DEQ received a revised renewal application for the Tier II operating permit.
April 16, 2002	DEQ received additional application information.
May 2, 2002	DEQ received additional application information.
May 10, 2002	The application was declared complete.
July 31, 2002	The permitting package was sent out for facility review
August 5, 2002	Facility comments were received by DEQ.
Sept. 28 – Oct. 28, 2002	Public comment period.
October 25, 2002	Public comments received.

DISCUSSION

1. Emissions Estimates:

The individual permitted tank throughputs along with respective tank fuel products are located in Appendix B of the permit. These are the throughputs and product fuel types requested by Sinclair that allows them to retain a minor source designation.

Since VOC and HAPs emissions are a function of throughput, to exceed the VOC and HAPs emissions submitted in the permit application, Sinclair would have to violate the permittee throughput limits. Table No. 1 contains the VOC and aggregated HAPs emissions for each source at Sinclair. The use of Tanks 4.0 software and using the partial speciation option resulted in an increase in VOC and HAPs emissions of most tanks relative to Operating Permit 001-00112. Because of the increase in VOC and HAPs emissions resulting from Tanks 4.0, Sinclair chose to reduce the throughput to the loading racks to remain a SM for VOC and HAPs.

Table 1. EMISSION ESTIMATES

Source Description	VOC (T/year)	Aggregated HAPs (T/year)
1. Tank 401	12.96	0.239
2. Tank 404	12.96	0.239
3. Tank 411	12.96	0.239
4. Tank 421	12.96	0.239
5. Tank 431	13.88	0.253
6. Tank 402	0.47	0.015
7. Tank 405	0.47	0.015
8. Tank 406	0.47	0.015
9. Transmix tank 400	0.28	0.008
10. Prover tank	0.28	0.008
11. Gasoline loading rack	0.0	0.0
11. Distillate fuel grade petroleum product loading rack	4.61	0.150
12. Fugitive emissions	0.92	0.149
13. Soil vapor extraction system	25.88	0.71
TOTAL	99.1	3.0

2. SVE Emissions

It was determined in a previous Sinclair PTC (issued July 7, 1999) that out of all the HAPs emitted from the SVE stack, benzene is the pollutant that has the most stringent AACC. Therefore, if benzene concentrations are acceptable then all the other HAPs concentrations are acceptable. This is also the reason that benzene has been chosen as the pollutant that triggers the thermal oxidizer standby mode. The thermal oxidizer does not need to be located at the facility so long as the monitored emission rate of benzene is less than or equal to 0.17 lb/hr. The annual average emission rate of benzene that would exceed the AACC at the Sinclair fence line is 0.17 lb/hr.

The permittee requested the LEL source test, along with the monthly testing, to demonstrate compliance with the VOC and HAPs emissions limits from the SVE. The LEL is the percentage of a compound's vapor-to-air (by volume) that will ignite if a flame is applied. The LEL of gasoline is 1.4% (Lange's handbook of chemistry, 13th edition, McGraw-Hill, 1985). The sensor of the LEL system measures on a basis of 0% to 100%, with 0% corresponding to an LEL of 0% and 100% corresponding to an LEL of 1.4%.

The LEL sensor is a handheld instrument that is inserted by a technician into the SVE exhaust stream to measure the LEL percentage. Vapor hydrocarbon content is calculated assuming the entire vapor from the SVE is present as gasoline vapor.

Method 18 is used to check the accuracy of the LEL sensor. The Method 18 performance test measures the amount of VOC vapor in the exiting exhaust stream and speciates (mass fractions) the components of the VOC measured. The Method 18 source test is a one-time test to be conducted concurrently with the first LEL source test that is to be conducted within one month after the permit is issued.

If an exceedance of the 0.17 lb/hr is detected during monthly monitoring, the SVE shall be shut down, and the thermal must be re-installed and placed in operation, and the SVE re-started within 24 hours of the exceedance.

3. CFR Applicability

The facility has not been modified or reconstructed after the applicability date of December 17, 1980; therefore, Sinclair is not subject to 40 CFR 60 Subpart XX.

The Tier II Permit No. 001-00112 was issued to establish federally enforceable product throughput limitations to be designated as an area source for HAPs; therefore, Sinclair is not subject to 40 CFR 63 Subpart R.

The tanks have not been modified or reconstructed after the applicability date of July 23, 1984; therefore, Sinclair is not subject to 40 CFR 60 Subpart Kb.

4. Modeling

No modeling was performed nor was any modeling required to assess the ambient air quality impacts of this facility.

5. Area Classification

Sinclair's Boise facility is located within the Northern Ada County Nonattainment Area, which is designated as a "moderate" nonattainment area for PM₁₀ and CO. This area is designated as unclassifiable for all other criteria air pollutants (NO_x, SO_x, and VOCs).

The facility is located at Air Quality Control Region 64, Zone 11.

6. Facility Classification

The facility is not a designated facility as defined by IDAPA 16.01.01.006.25 of the *Rules*. (The facility's petroleum storage capacity is approximately 5.834 million gallons. The designated facility threshold is 12.6 million gallons storage capacity.)

The facility is classified as a SM source due to permitted VOC emissions limits below 100 T/yr, and permitted HAPs emissions below 10 T/yr single HAP and 25 T/yr aggregated HAPs major source thresholds.

7. Regulatory Review

This operating permit is subject to the following regulatory requirements:

- | | |
|---------------------------------------|---|
| a. <u>IDAPA 58.01.01.006 & 7</u> | Definitions |
| b. <u>IDAPA 58.01.01.130-136</u> | Excess Emissions |
| c. <u>IDAPA 58.01.01.403</u> | Tier II Operating Permit |
| d. <u>IDAPA 58.01.01.403</u> | Permit Requirements for Tier II Sources |
| e. <u>IDAPA 58.01.01.404.01</u> | Opportunity for Public Comment |
| f. <u>IDAPA 58.01.01.404.01(c)(v)</u> | Consideration of Comments and Final Action |
| g. <u>IDAPA 58.01.01.404.04</u> | Authority to Revise or Renew Operating Permits |
| h. <u>IDAPA 58.01.01.405</u> | Conditions for Tier II Operating Permits |
| i. <u>IDAPA 58.01.01.406</u> | Obligation to Comply |
| j. <u>IDAPA 58.01.01.470</u> | Permit Application Fees for Tier II Permits |
| k. <u>IDAPA 58.01.01.625</u> | Visible Emissions |
| l. <u>IDAPA 58.01.01.650-651</u> | General Rules for the Control of Fugitive Dust |
| m. <u>IDAPA 58.01.01.728</u> | Sulfur Content Limit for Distillate Fuel Oil |
| n. <u>Section 37-2506 Idaho Code</u> | Quality Standards for Motor Gasoline and Distillate Fuel Oil - |
| o. <u>IDAPA 58.01.01.200</u> | Specifications set by the American Society of Testing and Materials |
| | Permit to Construct |

8. AIRS

AIRS/AFS FACILITY-WIDE CLASSIFICATION DATA ENTRY FORM

AIR PROGRAM	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	TITLE V	AREA CLASSIFICATION A – Attainment U – Unclassifiable N – Nonattainment
POLLUTANT							
SO ₂	B						U
NO _x	B						U
CO	B						N
PM ₁₀	B						U
PT (Particulate)	B						U
VOC	SM					SM	U
THAP (Total HAPs)	SM					SM	U
APPLICABLE SUBPART							

AIRS/AFS Classification Codes:

- A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For NESHAP only, class "A" is applied to each pollutant, which is below the 10 T/yr threshold, but which contributes to a plant total in excess of 25 T/yr of all NESHAP pollutants.
- SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.
- B = Actual and potential emissions below all applicable major source thresholds.
- C = Class is unknown.
- ND = Major source thresholds are not defined (e.g., radionuclides).

FEES

The facility has paid the applicable Tier II permit fee of \$500.00 in accordance with 58.01.01.470. This fee rule was in effect at the time the application was received and processed.

RECOMMENDATIONS

Based on the review of the application materials, and all applicable state and federal regulations, staff recommends that DEQ issue a Tier II operating permit and permit to construct to Sinclair Oil Corporation, Boise Products Terminal. An opportunity for public comment on the air quality aspects of the permit were provided in accordance with IDAPA 58.01.01.404.01.c. Staff members have notified the facility in writing of the required Tier II application fee of five hundred dollars (\$500.00). The permit will be issued upon receipt of the fee.

TA/sm

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cc: Mike McGown, Boise Regional Office

November 18, 2002

**STATE OF IDAHO
DEPARTMENT OF ENVIRONMENTAL QUALITY
RESPONSE TO PUBLIC COMMENTS
ON DRAFT TIER II AIR QUALITY PERMIT
FOR SINCLAIR OIL CORPORATION LOCATED IN BOISE, IDAHO**

Introduction

As required by IDAPA 58.01.01.404.01.c.i (*Rules for the Control of Air Pollution in Idaho*), the Idaho Department of Environmental Quality (DEQ) provided for public comment, including a hearing, on the Tier II permit proposed for the Sinclair Oil Corporation facility located in Boise Idaho. Public comment packages, which included the application materials, and draft permit and technical memorandum, were made available for public review at the DEQ's Boise Regional Office, and DEQ's State Office in Boise. A copy of the proposed permit and technical memorandum was also posted on DEQ's Web site. The public comment period was provided from September 28, 2002 through October 28, 2002. Those comments regarding the air quality aspects of the draft permit are provided below with DEQ's response immediately following.

Public Comments and DEQ Responses

Comments were received from Sinclair Oil Corporation.

- **Sinclair Comment:** Page 1 of 18, Section 4:
Correct the facility contact's last name to Greene.
- **Response:** Permit has been changed.
- **Sinclair Comment:** Page 13 of 18, Section 5.3:
The term "12-month rolling average" better describes the throughput limitations rather than "12-month rolling summation".
- **Response:** DEQ agrees with this description, and the permit has been changed.
- **Sinclair Comment:** Page 13 of 18, Section 5.5:
"The thermal oxidizer does not need to be operated when the amount of benzene entering the SVE is less than or equal to 0.17 lb/hr on a monthly basis".

Sinclair requests the Department add the following to this condition:
"The thermal oxidizer does not need to be present on-site when the benzene emissions are less than or equal to 0.17 lb/hr on a monthly basis. Should the benzene emissions exceed the monthly 0.17 lb/hr limit, Sinclair will shut down the SVE system until the thermal oxidizer is reinstalled and operational".

Sinclair believes when the benzene emissions from the SVE system are below the 0.17 lb/hr limit and the thermal oxidizer is not operated, the

thermal oxidizer is not required to be present at the facility. Historically, benzene emissions from the SVE system have been significantly below the 0.17 lb/hr limit (see the July 15, 2002 letter from Sinclair to the Department, Table 1.0, in the public comment package). This clarification is needed because the thermal oxidizer is currently being used in a remediation activity at one of Sinclair's other facilities. Sinclair does not see the utility of keeping dormant equipment on site in the unlikely event it may be needed in the future. Should further testing show the SVE emissions exceed the permit allowable, Sinclair will shut down the SVE system until the thermal oxidizer is reinstalled and operational.

- **Response:** DEQ agrees with the portion of the comment requiring Sinclair to have a thermal oxidizer on site at all times, and will change the requirement to allow the removal of this equipment. However, the purpose of having an SVE is to clean up soil contamination. Allowing the SVE to be shut down while awaiting the installation of a thermal oxidizer could unduly affect this required cleanup. Therefore, the permit condition will be changed to the requirement that within 24 hours of a measured exceedance of the 0.17 lb/hr emission limit for benzene, the thermal oxidizer shall be installed and operated. The SVE shall not be operated after a measured exceedance unless the thermal oxidizer is on operation. The SVE shall not be shut down in for more than 24 hours.

- **Sinclair Comment:** Page 14 of 18, Section 5.8.1:
Typo. Last sentence should read "5.3" instead of "5.3.1".

- **Response:** The error will be corrected.

- **Sinclair Comment:** Page 15 of 18, Section 5.10:
Please revise this paragraph to reflect the request to not require the thermal oxidizer to be present on-site if the emissions are less than the permit allowable (see changes to Section 5.5). Please revise the paragraph as follows:

"Within 60 days of issuance of this permit and if the thermal oxidizer is in operation, the permittee shall update the O&M manual for the thermal oxidizer originally required to be developed in the PTC. If the thermal oxidizer is in stand-by operation (re: permit section 5.5) then the requirement to update the O&M manual is not required. If the O&M manual has not been updated and the thermal oxidizer is brought back on-line, an update of the O&M manual will be required within sixty days".

- **Response:** DEQ does not agree with this request. The O&M manual is required to be developed to address the operation, maintenance, calibration, and repair of all equipment associated with the SVE including the thermal oxidizer. It is not the intent of this permit condition to only require an update of the O&M manual within 60 days of operation of the thermal oxidizer, but to require the update within 60 days of the issuance of this permit. The manual should be updated to reflect the most recent general description of the equipment, normal operating conditions, ect., regardless of the current operational status of the equipment. The O&M manual may refer to manufacturer technical manuals for specific calibration, operation, and maintenance procedures.

- **Sinclair Comment:** Technical Memorandum, Section 1 Purpose:

Sinclair requests the Department state all operating limitations or permit requirements are listed in the Tier II operation permit and the information in the technical memorandum is for supporting details and does not contain operating limitations or permit requirements.

- **Response:** The purpose of the Technical Memorandum is clear and no change to this section will be made.